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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,703	06/21/2000	SHUICHI NAGATO	2000_0574A	3448

7590 01/28/2004

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EXAMINER	
DOROSHENK, ALEXA A	

ART UNIT	PAPER NUMBER
1764	11

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/530,703	Applicant(s) NAGATO ET AL.	
	Examiner Alexa A. Doroshenk 3600	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 June 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7-10*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 13, 15, 19-24, 30, 32 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Tang (5,365,889).

With respect to claims 1-3, 19 and 38, Tang discloses a fluidized bed system comprising:

a reactor housing (20) divided by a plurality of partition walls (22 and 24) into a pyrolysis chamber (30)(reads on gasification as a gas is generated in this section), a combustion chamber (32) and a heat recovery chamber (34);

a revolving flow of fluidized medium of varied velocities/intensities in various regions are formed so as descending flows and upward flows of the fluidized medium are generated (see arrows in the figure and col. 4, line 61- col. 6, line 24);

a circulating flow of medium is formed between the pyrolysis chamber (30) and the combustion chamber (32) (see arrows and col. 4, line 61- col. 5, line 27) and travels through upper (22a) and lower (22b) openings in a first partition wall (22);

a circulating flow of medium is formed between the heat recovery chamber (34) can the combustion chamber (32) (see arrows and col. 6, lines 8-24) and travels through upper (24a) and lower (24b) openings in a second partition wall (24);

a heat transfer surface (66) within the fluidized be of the heat recovery chamber (34);

wherein oxygen is supplied to the bottom of the system (col. 3, lines 26-49)) (It is noted that the content of the fluidizing gas is not a structural limitation and therefor is not given any weight in the apparatus claim. An apparatus claim covers what a device is, not what a device does. MPEP 2114.) via diffusion devices such as distribution plates (52 a-d); and

the combustion chamber (32) and heat recover chamber (34) are integrated in a freeboard section (14) via opening (28a).

With respect to claims 4, 5, 21 and 22 it has been discussed above, that Tang discloses wherein the fluidizing gas (which is air) is supplied to the bottom of the device. It is noted that the content or amount of the fluidizing gas is not a structural limitation and therefor is not given any weight in the apparatus claim. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

With respect to claims 6 and 23, Tang illustrates wherein the first partition wall (22) has an inclined surface (26) toward said pyrolysis chamber (30) and a vertical surface (22) within the combustion area (32) (col. 2, line 63- col. 3, line 7).

With respect to claims 7 and 24, Tang illustrated wherein the second partition wall (24) has an inclined surface (28) toward said combustion chamber (32) and a vertical surface (24) within the heat recovery area (34) (col. 2, line 63- col. 3, line 7).

With respect to claims 13 and 30, Tang discloses wherein auxiliary fuel is supplied (64) to the weak fluidizing region (the lower portion) in the combustion chamber (32) (col. 4, lines 25-30).

With respect to claims 15 and 32, the operational pressure of a device is not a structural limitation and therefor the claim continues to read on the apparatus of Tang. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

With respect to claims 20, 36 and 37, Tang discloses all of the limitations as discussed with respect to claims 1-3, 19 and 38 above. Additionally, Tang discloses wherein the reactor can be of a concentric formation wherein the vessels are co-axially disposed within each other (col. 7, lines 33-36).

3. Claims 40 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Pillai (EP 0 312 840 A1).

Pillai discloses an apparatus comprising:

a fluidized bed furnace (12) divided by a partition wall (17) into a gasification section (14) and a combustion section (16); and

a revolving flow a fluidized medium (74) so as to form a descending flow and an upward flow between the gasification (14) and combustion (16) sections (col. 4, lines 25-33); and

a heat transfer surface (56) within said combustion furnace section (16).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 8-11 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 3 and 20 above, and further in view of Nagato et al. (6,139,805).

With respect to claims 8-10 and 25-27, Tang discloses a drain pipe (62) provided at the bottom of the chambers, but does not disclose wherein it is specifically located between the pyrolysis and combustion chambers and/or between the combustion and heat recovery chambers.

Nagato et al. teaches a similar fluidized bed combustion/gasifying device with fluidizing sections (8 and 18) separated by partitions (34) as well as heat recovery means (24). The material discharge port (28) of Nagato et al. is located between the fluidized sections (below the partitions (34)) (see figure 6). Nagato et al. also discloses wherein this location has an advantage of not allowing incombustible material to form on

the heat recovery means so that the device can be operated continuously without malfunction and then used to combust industrial wastes (col. 7, lines 24-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the location of drainage in the device of Tang in the manner of Nagato et al. in order to ensure continuous operation of the device and to allow for greater use in the materials to be processed.

With respect to claims 11 and 28, Tang does disclose wherein the furnace bottom (see figure) is inclined downwardly toward the material discharge pipe (62). Additionally, Nagato et al. also show the bottom having a downward inclination (3 and 4) toward the discharge port (28) (figure 6) (col. 5, lines 51-56).

7. Claims 12, 18, 29 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 3,15, 20 and 32 above, and further in view of Nagato et al. (5,513,599).

With respect to claims 12 and 29, Tang does not disclose a secondary air injection into the freeboard section of the furnace.

Nagato et al. discloses a similar fluidized bed combustion device and teaches having an air inlet (34) provided in the freeboard (31) of the device in order to enable two-stage combustion (col. 15, lines 17-20) so that unburned combustible materials in the gas are combusted (col. 4, lines 37-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an air inlet in the freeboard of the device of Tang in order to enable two-stage combustion as taught by Nagato et al.

With respect to claims 18 and 35, Tang does not disclose wherein the device is housed in a pressure vessel. Tang does disclose that the reactor maybe modified to incinerate other waste materials (col. 7, lines 46-48).

Nagato et al. discloses a similar fluidized bed combustion device (2) for coals, petro coke, or the like, which is required to operate in a pressure vessel (1) (col. 1,lines 8-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a pressure vessel, as taught by Nagato et al., surrounding the fluidized bed combustion device of Tang when the device is to be used for processing coals, petro coke or like materials, such as those taught by Nagato et al., in order to meet the pressure conditions required for fluidized bed combustion of such materials.

8. Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 3 and 20, and further in view of Fujimura et al. (EP 0 776 962 A2).

With respect to claims 14 and 31, Tang does not disclose wherein discharged gases are fed to a combustion furnace and combusted 1200°C or higher.

Fujimura et al. teaches wherein gas generated by gasifying wastes can be used for generation of electricity (p. 3, lines 19-21). Fujimura et al. further discloses that to produce gas usable to generate electricity, the gases from a gasifier (4) must be combusted in a furnace (6) of a temperature of 1300°C or higher (p. 3, lines 27-35). (It is noted that the operational temperature of a device is not a structural limitation and therefore not given weight in an apparatus, claim MPEP 2114, but has been treated

regardless.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a combustion furnace for the gases of the device of Tang in order to make use of the product of Tang's device in another application, such as in the generation of electricity.

9. Claims 16, 17, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claims 3 and 20 above, and further in view of Ahland et al. (4,833,877).

With respect to claims 16, 17, 33 and 34, it is first noted that the operational pressure of a device is not a structural limitation. An apparatus claim covers what a device is, not what a device does. MPEP 2114.

Tang does not disclose wherein the gases discharged from the furnace are cooled, dedusted and introduced to a gas turbine.

Ahland et al. teaches wherein gases from gasification can be combined with a gas turbine to produce electricity (col. 1, lines 9-16). The gases are cooled (1) then dedusted (3) and sent to a gas turbine (8) (col. 4, lines 32-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide cooling, dedusting and a gas turbine for the gases of the device of Tang in order to make use of the product of Tang's device in another application, the generation of electricity.

10. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tang (5,365,889), as applied to claim 38, and further in view of Ohshita et al (5,156,099).

Tang discloses all of the structural limitations as discussed with regard to claim 38, above, but does not disclose wherein a heat transfer surface for collecting heat from combustion gas is located in the freeboard above all of the chambers.

Ohshita et al. teaches a similar partitioned fluidized bed gasification device and provides a heat transfer surface (6) the entire width of the freeboard (see figure 1) to have economic heat recovery and maintain the combustion temperature at a constant temperature (col. 8, lines 7-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a heat transfer surface in the freeboard of Tang, as taught by Ohshita et al., in order to have economic heat recovery as well as maintain temperature control.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Alexa Doroshenk
Patent Examiner
Art Unit 1764

January 22, 2004